(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau





(43) International Publication Date 25 March 2004 (25.03.2004)

PCT

(10) International Publication Number WO 2004/024282 A2

(51) International Patent Classification7:

B01D

(21) International Application Number:

PCT/US2003/028432

(22) International Filing Date:

10 September 2003 (10.09.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 60/409,687 60/419,867

10 September 2002 (10.09.2002) 21 October 2002 (21.10.2002)

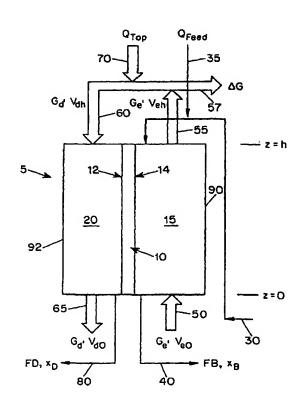
(71) Applicant (for all designated States except US): ARI-ZONA BOARD OF REGENTS [US/US]; Arizona State University, Mail Code 3511, 1711 South Rural Road, Tempe, AZ 85287 (US).

(71) Applicant and

- (72) Inventor: BECKMAN, James, R. [US/US]; 1937 East Calle de Arcos, Tempe, AZ 85284 (US).
- (74) Agent: LEE, Samuel, S.; Dergosits & Noah LLP, Four Embarcadero Center, Suite 1450, San Francisco, CA 94111
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR SIMULTANEOUS HEAT AND MASS TRANSFER UTILIZING A **CARRIER-GAS**



(57) Abstract: The invention disclosed herein relates to a continuous contacting apparatus for separating a liquid component from a liquid mixture. In one embodiment, the apparatus includes a first chamber having first and second ends, a second chamber having first and second ends, and a common heat transfer wall capable of providing thermal communication between the first chamber and the second chamber. Two condensors/heat exchangers can also be connected to the two chambers. In an another embodiment, the invention relates to a continuous contacting apparatus for exchanging heat released by a desiccant. apparatus includes a heat-releasing chamber, a heat-absorbing chamber, a common heat transfer wall capable of providing thermal communication between the heat-releasing chamber and the heat producing chamber, and a desiceant regenerator.

European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

 without international search report and to be republished upon receipt of that report